Zinc-amino-acid complex reduces oxidative stress markers in plasma of broilers

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Introduction

Zinc is an important trace element to maintain redox balance in tissues. Zinc supplementation can prevent oxidative damage, so sufficiently available zinc is important. Organic zinc is considered to be more bioavailable than inorganic zinc, so a trial was conducted to compare the effect of organic vs. inorganic zinc on oxidative status in broilers.

Materials & methods

In a broiler trial, zinc was supplemented as zinc-amino-acid complex (Zn-AA) or as $ZnSO_4$ with 10 replicates of 34 animals per treatment. Blood samples were collected at day 10 and 36 for malondialdehyde (MDA) and glutathione peroxidase activity (GPx) measurements. MDA is a marker for lipid peroxidation caused by oxidative stress, while GPx is an important intracellular enzyme of the antioxidant system.

Results

Treatment with Zn-AA showed a significantly lower level of MDA in plasma at day 10 (15.1 vs. 16.7 nmol/mL, P=0.007). At day 36 treatment with Zn-AA resulted in a lower GPx activity (0.60 vs. 0.72 µmol/min.ml plasma, P=0.021).

Conclusion

Supplementation with Zn-AA lowered oxidative stress (measured by MDA) in the early broiler growth phase. During broiler growth, treatment with Zn-AA seemed to result in a lower need for antioxidant enzymes (GPx) to maintain the oxidative status in broilers.